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MEMORANDUM FOR: Director, National Photographic Interpretation Center

SUBJECT : Request for Approval to Expend [redacted] from FY-1970 Funds 25X1
for a Ground Order-of-Battle Resolution Study Contract

[redacted] 25X1

1. This memorandum requests approval for the commitment of funds for a contract. The specific request is contained in paragraph 7.

2. Image quality requirements for satellite reconnaissance systems exert a major influence on the costs of such systems. The more stringent the specifications, the higher the development and production costs. Photographic ground resolution is a primary image quality variable affecting intelligence extraction from reconnaissance exploitation. Empirical determination of information yield as a function of improving image resolution can provide a critical input to objective acquisition system design. Through the use of controlled imagery, simulating potential optical system capabilities, resolution break points may be established for specific targets. These cutoffs, beyond which no further useful intelligence information can be extracted from photography, act as guidelines to collection planners who are thus able to compare intelligence requirements on one hand with attendant system parameters and costs on the other. Conversely, once the parameters of a new reconnaissance system have been designated, those requirements that the system can be expected to fulfill may be compiled objectively by empirical investigations of PI output as a function of anticipated image quality. Results of such studies must be target specific, since interpretation of targets consisting of large components usually can be accomplished with poorer ground resolution than that required for targets containing small components. Furthermore, usable results must be specific to particular PI functions. Mere target identification as the interpreter's goal can generally be achieved with poorer image quality than that needed for detailed technical analysis of the same target.

[redacted]

GROUP 1
Excluded from automatic downgrading and declassification

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TOP SECRET RUFF

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SUBJECT: Request for Approval to Expend [redacted] from FY-1970 Funds for a Ground Order-of-Battle Resolution Study Contract [redacted]

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3. The proposed study to be conducted [redacted] will treat ground order-of-battle (GOB) targets. This object category is of high priority in the Intelligence Community in terms of both current denied area assessment via satellite reconnaissance and future SALT environment inspection capabilities. Previous investigations of intelligence extraction as a function of photographic ground resolution have been conducted for such targets as aircraft, ICBM sites, and mobile radars. The results of these studies have proven to be of great interest and assistance to Community planners. Each study has produced results unique to the specific target under consideration. The radar investigation resulted in an indication of the most stringent ground resolution requirement [redacted] because of the many small electronic components included in the targets. Photo interpretation requirements in the GOB category are becoming increasingly more detailed. It may very well be that future analysis requirements can be met only by ground resolutions even finer than those presently indicated for the electronics targets.

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4. Developing data on intelligence extraction in the particular area of ground order-of-battle equipment--as a function of photographic ground resolution--will enable NPIC to respond with greater precision to the needs of collection system designers and resource planners. Such responses, giving proven technical data about the degree and quality of intelligence which could be obtained relevant to various design resolutions, enable better judgments to be made concerning value versus costs of alternative designs and objectives.

5. The primary objective of the proposed project will be to consider GOB target information contained within the photographic resolution range [redacted] representing a hypothetical optimum system, to [redacted] representing [redacted] rendition at approximately 40° obliquity. The imagery utilized will simulate as closely as practicable the modulation transfer function and scale as well as the resolution of present and proposed acquisition systems. The study will employ NPIC photo interpreters and/or external PI's performing similar GOB analysis functions.

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Final results of the investigation should be available to the Community several months in advance of the impact upon the Center, thus enabling Center management to make a practical prediction of GOB readout functional assignments and capabilities in the environment. The study's results will also depict those GOB requirements, if any, which can be satisfied only with a ground resolution better than that expected from the improved The proposed project will consist of two major phases, data collection and data analysis. A final technical report will be prepared upon completion of the study. is currently under a separate contract to prepare for the study by executing an experimental design, by coordinating the acquisition and processing of domestic GOB imagery and ground truth data, and formatting the required experimental materials.

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6. has been chosen to perform the proposed project because of the contractor's experience gained and competence demonstrated on similar previous efforts for NPIC. It is deemed inadvisable at this time to request open bids on such a project due to the absence of any other cleared contractor well-versed in the extremely specialized nature of the research involved. Estimated price of the work to be done under this contract is under a separate Time and Materials contract to NPIC, is assisting with several tasks in the current contract. It is anticipated that will continue its support role to the effort proposed herein, under both FY-70 & FY-71 funds. Eastman Kodak is performing the image processing portion of this program for approximately under PAR 255 of Domestic, high resolution photo coverage of GOB targets is being flown by an OSA/DDS&T aircraft covered by approximately of miscellaneous services funds transferred from NPIC.

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7. Successful completion of this contract could lead to further image quality requirements studies to contribute to NPIC's imagery exploitation planning. However, additional investigations of photographic ground resolution as a critical variable probably will not be required. Similar studies employing the simulated products of unconventional sensor systems, such as line-scan, side-looking radar, or infra-red, are likely future requirements.

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[redacted]

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9. It is requested that the negotiation with [redacted] Incorporated, for a contract to conduct the program described at a cost not to exceed [redacted] be approved.

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[redacted]
Chief, Technical Services & Support Group,
NPIC

Attachments:
1. Proposal
2. Form 2420

APPROVED: _____ _____
ARTHUR C. LUNDAHL Date
Director
National Photographic Interpretation Center

Distribution:
Copy 1 - NPIC/TSSG/SC&PS
2 - NPIC/ODir
3 & 4 - NPIC/TSSG
5 - NPIC/TSSG/RED

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[redacted]

REQUEST TO PROCUREMENT DIVISION FOR SERVICES

(other than property or building maintenance and repairs)

OFFICE/DIV/BR	REQUEST NO.	DATE OF REQUEST	I CERTIF AMOUNT O AVAILABL
NPIC/TSSG/RED/ATB	5500-6/02-70		25X1

PROJECT TITLE	PRO.	SIGNATURE OF BUDGET OFFICER
Ground Order of Battle Resolution Study		25X1

CONTRACTOR *(if known)*	PROPOSAL NO. AND DATE	CONTRACT & TASK ORDER NO. *(if known)*
	24 Feb. 1970	New Contract (CPAF) 25X1

TYPE OF SERVICE REQUESTED			APPLICABLE ONLY TO REPAIRS AND MODIFICATIONS
X	RESEARCH/DEV	TRANSFER OF FUNDS TO OTHER GOVT. AGENCY *(specify if applicable)*	TECHNICAL INSPECTION IS REQUIRED BY ☐ RECEIVING DEPOT T & I ☐ TECHNICAL MONITOR
	GRANT		☐ ITEMS TO BE PICKED UP OR ☐ SERVICES PERFORMED AT:
	REPAIR		ITEMS TO BE REDELIVERED TO:
	MAINTENANCE		
	MODIFICATION		

STERILITY	CONTRACT CLASSIFICATION	WORK CLASSIFICATION	HARDWARE CLASSIFICATION	REPORTS CLASSIFICATION
	S	TS	--	S 25X1

SHORT SUBSTANTIVE TITLE AND/OR DESCRIPTION OF SERVICE TO BE PERFORMED

An investigation to define photographic ground resolution requirements for the interpretation of ground order of battle targets on the imagery from various present and proposed reconnaissance.

(See reverse for specific information required on R&D requests.) 25X1

DESIGNATION		DATE
		23 APR 1970

PROCUREMENT DIVISION USE

DATE RECEIVED IN PD	RECORDED BY	SECTION ASSIGNED TO	NEGOTIATOR

FORM 3-67 2420 REPLACES FORMS 2420 AND 2416 WHICH MAY BE USED. ☐ UNCLASSIFIED ☐ CONFIDENTIAL ☒ SECRET ☐ _____ (specify)

(5-12-38)

1. JUSTIFICATION FOR SOURCE SELECTION

Follow-on to Contract

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2. PROPOSAL

As attached

3. DELIVERABLE ITEMS

REPORTS REQUIRED — X — NO. OF COPIES — [X] Bi-MONTHLY *(3) — [ ] INTERIM — [ ] QUARTERLY — [X] FINAL *(25)

HARDWARE *(state type and number)*

OTHER

4. GFE REQUIRED

None

5. SPECIAL INSTRUCTIONS

[ ] UNCLASSIFIED [ ] CONFIDENTIAL [X] SECRET [ ] _____ (specify)